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RESILIENCE IN ADOLESCENTS: TEMPERAMENT AND FAMILY DYNAMICS AS PROTECTIVE FACTORS

Abstract

Resilience is shaped by an interplay of individual, family, and local community factors. According to researchers, resilience is closely related to temperament traits such as sociability (Werner, 2000). Additionally, resilience resources in adolescents are determined by family dynamics (attachment and parenting styles), which are instrumental in developing a sense of competence and agency in children (Benard, 1998; Constantine, Benard, Diaz, 1999).

The aim of the paper is to investigate how resilience in 18-year-old adolescents correlates with their temperament traits, their attachment to the parents, and the parenting styles of the parents.

The research was carried out in a sample of second-form secondary school students in Kraków, Poland. The sample came from one of the most distinguished secondary schools in Poland. Thus, it was hypothesised that they could handle academic pressure, task management, and time management; and they would have satisfactory resilience levels. The following tools were used: the Ogińska-Bulik and Juczyński SPP-25 Resiliency Measurement Scale (2011), the PTS Temperament Questionnaire and a family dynamics inventory of our own design.

The outcomes suggest that both the total score in SPP-25 and its individual subscale scores reveal a positive correlation with the majority of the scores obtained with the PTS Temperament Questionnaire. A correlation was also established in girls between their *resilience* and the *attachment* with the mother. Differences between the two genders are visible in two subscales, as boys scored higher in *Optimistic Attitudes* and *Energy and Sense of Humour* and *Openness to New Experiences*.

Keywords: resilience, temperament, attachment, parenting style

Odporność psychiczna w adolescencji: temperament i relacje rodzinne jako czynniki ochronne Streszczenie

Dla odporności psychicznej człowieka znaczenie mają zasoby indywidualne, rodzinne oraz dotyczące społeczności lokalnej. Badacze zjawiska rezyliencji wskazywali na związki cech temperamentu, szczególnie towarzyskości, z odpornością psychiczną (Werner, 2000). Wśród czynników rodzinnych ważnych dla zasobów odpornościowych młodego człowieka wymieniano relacje rodzinne (przywiązanie oraz styl wychowania) istotne dla rozwijania poczucia kompetencji, a także sprawstwa u dziecka (Benard, 1998; Constantine, Benard, Diaz, 1999).

Celem artykułu jest prezentacja relacji pomiędzy odpornością psychiczną adolescentów w wieku 18 lat z jednej strony, a ich cechami temperamentu, stopniem przywiązania do rodziców oraz rodzajem stylu wychowawczego rodziców z drugiej strony.

Badanie przeprowadzono wśród uczniów klas drugich liceum ogólnokształcącego w Krakowie. Grupa badana to uczniowie jednej z najlepszych szkół ogólnokształcących w Polsce, a więc, w założeniu, młodzież potrafiąca dobrze radzić sobie z presją wymagań szkolnych, zarządzaniem zadaniami i czasem, zatem potencjalnie charakteryzująca się dobrym poziomem odporności psychicznej. W badaniu użyto Skali Pomiaru Prężności – SPP-25 (Ogińska-Bulik, Juczyński, 2011), Kwestionariusza Temperamentu PTS (Strelau, Zawadzki, 1998) oraz kwestionariusza dotyczącego relacji rodzinnych własnego autorstwa.

Uzyskane wyniki wskazują, że zarówno wynik ogólny na Skali Pomiaru Prężności, jak i poszczególne jej czynniki korelują dodatnio z większością wyników Kwestionariusza Temperamentu PTS. Zauważono również związek siły więzi z matką i odporności psychicznej u dziewcząt. Różnice w rezyliencji pomiędzy płciami widoczne są w wyższym poziomie dwóch czynników składowych: *optymistycznego nastawienia i energii* oraz w *poczuciu humoru i otwartości na nowe doświadczenia* u chłopców.

Słowa kluczowe: odporność psychiczna, temperament, przywiązanie, styl wychowawczy rodziców

Introduction

Adolescence brings a large number of personal and social challenges (Czerwińska-Jasiewicz 2015; Erikson, 2004; Obuchowska, 2006). Typically, such events confront an individual with his or her own developmental challenges, academic requirements, and peer expectations. However, some events may also be extraordinary and involve risky behaviours and difficult ethical choices. The future development of adolescents is often determined by their resilience levels.

Resilience denotes harmonious development in children and young people despite adversity and major stressful events (Constantine, Bernard, Diaz, 1999; Masten, Obradović, 2006; Kolar, 2011); an effective regaining of balance and mental flexibility defined as an internal strength and a “capacity for self-improvement” (Tugade, Fredrikson, Feldman-Barrett, 2004); and a “key to mental health, or a meta-resource with a unique regulatory power” (Ogińska-Bulik, Juczyński,

2011). Apart from unique situations, young individuals need to show suitable resilience levels to handle daily stress and carry out developmental tasks that are typical of adolescence. Resilience defined as individual resources, or ego-resiliency, encompasses both biological aspects (e.g. temperament) and competences that emerge through an interaction with one's environment (e.g. attachment). Both factors were included in our research and are briefly described below.

Positive temperament is one of the individual protective factors and a behaviour regulatory mechanism that is nonetheless liable to change as a child develops and is exposed to his or her physical and social environment (Werner, Schmit, 1992). Based on Thomas and Chess's temperament types (1989), three different types of children can be distinguished: 1. *an easy child*, i.e. regular in biological rhythms and adaptable; 2. *a difficult child*, i.e. irregular in biological rhythms, finds it difficult to adapt to change, inhibited and requires excessive control; 3. *a slow-to-warm-up child*, who adapts slowly after numerous repetitions, a child with a powerful ego. Researchers tend to describe the relationship between temperament and maladaptive behaviours in the following manner: difficult temperament is a risk factor predicting the emergence of externalised and antisocial behaviours; it is also treated as a nuisance by the parents (since temperament shapes interaction) and can increase the risk of behaviour disorders (Miklowska, 2000; Rothbart et al., 2001; Thomas, Chess, 1989). Favourable temperament traits, which foster resilience, include: positive and moderate mood, suitable control and inhibition, adaptive skills, and sociability (Rothbart et al., 2001), as well as the ability to cope with negative emotions and impulse control (Bonard, 1998; Constantine, Bonard, Diaz, 1999; Werner, Schmitt, 1992).

Another individual factor is attachment, which reflects the relationship an adolescent has with his or her parents. Developed through an interaction with one's immediate environment, attachment serves as a catalyst for social skills, self-regulation capacity, general attitude (optimistic-pessimistic), and self-agency. Considering resilience components, attachment is a primary foundation and predictor of adaptive skills and developmental success in children (Le Buffe, 1999; Masten, 2001; Masten, Powel, 2003; Sikorska, 2016; Werner, 2000).

Numerous researchers emphasise the role attachment plays in promoting harmonious development (Bowlby, 1973; Cassidy, Berlin, 1994; Ahnert, 2010). The safe basis helps children to explore their environment and accumulate experience; it also fosters successful affect regulation in children (Sroufe, 1996; as cited in: Żechowski, Namysłowska, 2008). Initially, insecure attachment was defined as either avoidant (A) or ambivalent (C) (Ainsworth et al., 1978; as cited in: Colonnese et al., 2013). Later, disorganised attachment (D) was also added (Main, Salomon, 1990), where a child's anxiety results from the double bind in which the child is both scared and soothed by the caregiver (Colonnese et al., 2013; Żechowski, Namysłowska, 2008).

Mentalization is an ability that develops closely with attachment (Białecka-Pikul, Szpak, 2014). The reciprocal influence between attachment and mentalization was

clearly observed. Firstly, the attachment researchers underline better mentalization of development in children with secure bond. The background of this progress is particular mother's sensitivity and an approach to her child, which is expressed in treating a child as an object possessing a mind, a thinking being (*maternal mindmindedness* by Elisabeth Meins and *parental reflective functioning* by Peter Fonagy). Secondly, mother's ability to understand her child's mental states can predict not only the secure attachment in her child, but also child's theory of mind.

Based on previous experience, adolescents and adults develop internal models of operation which reflect their attachment styles. They serve as mental representations of society and are used to perceive current events, predict future events, and create action plans. They play a key role in self-management and self-regulation in adolescence and adulthood (Bowlby, 1973; Bartholomew, Shaver, 1998). Internal models of operation are subconscious and as such relatively stable and difficult to change. Insecure attachment can have a number of implications for young people: fearfulness (Bowlby, 1973; Stayton, Ainsworth, 1973), excessive distance, and withdrawal, as well as excessive irritability, poor impulse control, and poor self worth, which is typical of individuals who doubt they can obtain reassurance in distress (Erikson, 2004; Obuchowska, 2006).

Family resources in the context of emerging resilience include: family belief systems, family organisation patterns, and parenting styles (Walsh, 2003; Bonard, 1998; Coleman, Ganong, 2002). Suitable parentings styles enhance clarity in critical situations through open communication, expression of emotions, attachment fostering, clear boundaries (discipline), and skilful problem solving (Grzegorzewska, 2011). Parenting styles are defined as representing standard strategies and patterns of parenting practices used by parents in their child rearing. The authoritative parenting style whereby parents are responsive and demanding and create a suitable environment for upbringing is considered optimal for resilience development in children. Other protective factors in the family include: family structure and cohesion, a conjugal bond between the parents, a supportive relationship between the parents and the child, a stimulating home environment, extended social support, and regular family income (Zolkoski, Bullock, 2012). To paraphrase Winnicott, these characteristics make a good enough family that creates optimal conditions to develop and support the child (Sikorska, Piasecka, Gerc, 2009).

Terms "attachment" and "parenting styles" describe phenomena, that are crucial in the adolescent development. Secure attachment, what reflects in democratic parenting style, builds the best developmental pattern. Parenting style reflects parents' attitude towards their child and can be analysed in dimensions as responsiveness vs. unresponsiveness and demanding vs. undemanding (Baumrind, 1985).

A child's relationship with the parents changes in adolescence. Adolescents begin to feel an increasing need for independence and autonomy, which is necessary for their development (Erikson, 2004; Obuchowska, 1996; Zazzo, 1972). The way young people perceive their relationship with the parents often has a bearing on

conflicts that are typical of adolescence: 1) resulting from developmental changes, 2) resulting from children's and parents' individual traits, 3) intergenerational conflicts (Gurba, 2013; Oleszkowicz, Senejko, 2013).

These individual and family factors were identified in family research as instrumental for children and young people in coping with daily stress and life challenges (Coleman, Ganong, 2002; Constantine, Bonard, Diaz, 1999; Kolar, 2011; Masten, Obradović, 2006). Academic achievement is one of the most important challenges in adolescence, because as they grow in self-awareness young people tend to think more often and more seriously about their future. Thus, resilience seems to be particularly helpful in the academic context. Resilience in the school context is defined as a capacity for bouncing back after failure and improving academic performance (Cassidy, 2016). Students who have experienced failure can be divided into those who perform poorly and will continue to perform poorly and those who thrive on challenges and flourish despite adversity (Martin, Marsh, 2006).

Our research was inspired by two ideas. Firstly, we set out to explore the question posed by Judith Harris (2000): whether genes and peers have the primacy over parenting in young people's development. We found it intriguing to investigate resilience in the nature vs. nurture context.

Secondly, we wanted to investigate resilience in young people exposed to significant academic pressure (attending one of the top secondary schools in Kraków), peer rivalry, and high expectations from the parents.

The research presented in the paper was exploratory in nature. It was carried out with a view to investigating the relationship of temperament and attachment and parenting styles with resilience levels in secondary schools students. Resilience was investigated as a whole and as each of its components.

Method

Sample

The sample was composed of secondary school students (second form) ($N = 70$, M age = 17.7). The research was carried out during a form tutor period. The study involved students from two forms with an extended curriculum in the humanities and one form with an extended curriculum in the arts. The gender balance was a little skewed because such curricula are more often selected by girls.

Measurement tools

SPP-18 Resiliency Measurement Scale (Ogińska-Bulik, Juczyński, 2011) was used to measure resilience as an individual characteristic, or ego resiliency, which is key for successful coping with traumatic events and daily stress; it also fosters the adaptation process. The scale serves as a self-descriptive tool (for young

people from 12 to 19 years of age) comprising 18 items. The scale measures the total ratio as well as four different resilience factors:

1. Optimistic Attitude and Energy.
2. Persistence and Determination.
3. Sense of Humour and Openness to New Experiences.
4. Personal Competence and Tolerance of Negative Affect.

Calculated with Cronbach's alpha, the internal conformity of the scale is 0.82 (standard deviation = 4.68). The four subscales are similar in reliability, which ranges from 0.76 to 0.87. Since each subscale comprises only 4 or 5 items, the outcomes can be deemed satisfactory.

Calculated by test-retest (6 weeks in between the measurements) in a sample of 30 young people (M age = 16.1; SD = 0.56), the absolute stability of the tool is 0.78, which demonstrates the high stability of the construct.

Factor analysis (using varimax rotation, the Kaiser-Guttman rule, and the scree test) shows that Factor 1: Optimistic Attitude and Energy has the largest share (42.5%) in the sample. Other factors explain the variance by just above 20% in total. The obtained factor loadings are high (above 0.50) (Ogińska-Bulik, Juczyński, 2011).

The PTS Temperament Questionnaire (Strelau, Zawadzki, 1998) was used to measure the behavioural characteristics of the nervous system, which play a major role in the process of human adaptation to an external environment. The questionnaire enjoys an international acclaim and is particularly recommended to psychologists: practitioners who investigate and improve an individual's functioning in stressful situations. The tool was designed for people between 15 and 80 years of age. The PTS Temperament Questionnaire is composed of 57 items, 19 in each subscale:

1. Strength of Excitation (SE).
2. Strength of Inhibition (SI).
3. Mobility of the Nervous System (MNS).
4. Balance of the Nervous System (BNS).

The psychometric characteristics of the primary sample turn out to be satisfactory. The three major subscales (*Strength of Excitation*, *Strength of Inhibition*, *Mobility of the Nervous System*) produced varied results, but their reliability was nonetheless satisfactory; the same applies to SE (0.80) and MNS (0.83). SI's reliability reached an acceptable threshold of 0.71. In the construct sample, SI also produced lower "position-scale" correlations than SI and MSN, its reliability also being the lowest (0.75). Carried out after two weeks, re-test yielded the highest scores in SE and MNS (0.76 and 0.78). A significantly lower score was produced by SI (0.60). All other scores ranged between 0.58 and 0.63 (apart from SI, which yielded 0.53 after a six-month break) (Strelau, Zawadzki, 1998).

The nervous system typology by Pavlov (strong and weak) equates the Hippocrates-Galen temperaments (strong overlapping with choleric, phlegmatic, and sanguine; weak with melancholic). We used the PTS Temperament Questionnaire

to investigate several detailed temperament characteristics such as Mobility of the Nervous System, Balance of the Nervous System, Strength of Excitation, and Strength of Inhibition.

The family dynamics questionnaire of our own design

1. Students assessed their attachment to the parents by choosing several brief answers that best describe their family dynamics (they described their attachment to the father and to the mother separately).

How do you bond with your mother (father). How deeply connected are you? Choose the best answer.

- a) Very strong. (We share secrets, thoughts, and feelings; we spend a lot of time together).
- b) Strong. (We talk about major problems; we can trust and rely on each other; we do our best to spend time together).
- c) Moderate. (We speak from time to time; we trust each other. We do not spend too much time together).
- d) Weak. (We have poor or almost no connection; if I am in trouble, my mother/father is not the first person to turn to for help or advice).

2. Students also assessed the parenting styles of their parents.

We used the typology of parenting styles by Lewin, Lippitt, and White (1939), who described three major styles: authoritarian, democratic, and liberal (*laissez faire*) (Ostafińska-Molik, Wysocka, 2014). The three styles imply different family characteristics and family dynamics for each member, different influencing styles, and preferred parenting methods, which reflect the parents' beliefs about the mechanisms of individual development (Ryś, 2001).

The participants were asked to choose one of the three parenting styles that best describe their families.

- a) Authoritarian.

Authoritarian families are marked by a visible distance between the child and the parents. Their interaction is formal and rigid; comfort, care, and support are rarely provided. Parents have high expectations of the children; they fail to accept that their children may have weaknesses, limitations, or a bad day. Rules are rules, which is why no mitigating circumstances or objections are accepted. Parents refuse to accept mistakes, errors, or failings in their children. Feelings are never discussed, and difficult feelings are forbidden and repressed.

- b) Democratic.

Children in democratic families participate in family life; they join family discussions and talk about family issues. Children have duties they have accepted; the duties are not imposed but discussed with the parents. Democratic parents do not use punishment, which is replaced with natural consequences, discussions, and explanations why certain things are out of bounds. Parents in democratic families use descriptive praise. The boundaries of each family member, parents and children alike, are respected. Democratic families are marked by love and mutual understanding.

c) Liberal.

The liberal style is the reverse of the authoritarian one. Children in liberal families are given a lot of freedom. Parents create few boundaries, and when they do they fail to be consistent in keeping them. Liberal parents only sometimes show interest in their children when they feel like it; most of the time they fail to exercise control and turn a blind eye to antisocial behaviours. The liberal style implies indulgence and submissive attitudes towards the children. Accordingly, liberal parents accommodate every whim of their children and accept their aggressive or rude behaviours.

Outcomes

The majority of the participants (ca. 76%) scored high or moderate in resilience (35 people with 7–10 sten, 14 people with 5–6 sten). In comparison, the normalised SPP-18 sample scored low (31.3%), moderate (37.9%), and high (33.8%) in resilience (Ogińska-Bulik, Juczyński, 2011).

Temperament and resilience

Our research questions were investigated with statistical analysis. Correlative analysis with Pearson's chi-squared test was used to explore possible correlations between the Ogińska-Bulik and Juczyński SPP-18 Resiliency Measurement Scale and the PTS Temperament Questionnaire outcomes.

Table 1. Resilience and Temperament. Correlative Analysis, Pearson's Chi-squared Test

	SPP	SPH	RPN	RWN
Total Resilience Ratio	0.7476	0.162	0.5535	0.4473
	p = .000	p = .145	p = .000	p = .000
Factor 1 Strength of Excitation (SE)	0.6387	0.1998	0.4459	0.3383
	p = .000	p = 0.097	p = .000	p = .004
Factor 2 Strength of Inhibition (SI)	.6799	.0793	.4511	.4843
	p = .000	p = .514	p = .000	p = .000
Factor 3 Mobility of the Nervous System (MNS)	.5471	.2279	.4470	.2371
	p = .000	p = .058	p = .000	p = .04
Factor 4 Balance of the Nervous System (BNS)	0.7325	.1101	.581	.4845
	p = .000	p = .364	p = .000	p = .000

Source: own work.

Three temperament traits correlate with resilience and its components in secondary school students. Table 1 demonstrates correlations between the total

resilience ratio and each temperament factor. The following correlations were established: *resilience* and *Strength of Excitation* (SE) $r = .75$; *resilience* and *Mobility of the Nervous System* (MNS) $r = .55$; and *resilience* and *Balance of the Nervous System* (BNS) $r = .45$, where $p = .000$. Only *Strength of Inhibition* fails to correlate with *resilience*.

Correlations between three temperament traits (except for Strength of Inhibition) and four resilience components were established. The highest positive correlations were as follows: *Strength of Excitation* (SE) with *Optimistic Attitude and Energy* (Factor 1) ($r = .64$); with *Persistence and Determination* (Factor 2) ($r = .68$); with *Sense of Humour and Openness to New Experiences* (Factor 3) ($r = .55$); and *Personal Competence and Tolerance of Negative Affect* (Factor 4) ($r = .73$). Statistically significant correlations were also discovered between both *Mobility of the Nervous System* and *Balance of the Nervous System* and all *resilience* components. The scores were far from high, however (Table 1).

A correlation between Balance of the Nervous System and resilience was established in girls $r = .52$, $p < .005$; no such correlation was discovered in boys.

Separate correlative analysis for male and female participants shows that *Balance of the Nervous System* in girls correlates positively with their resilience levels ($r = 0.52$, where $p = .000$). No such correlation was established for men. For women, *Balance of the Nervous System* correlates with each *resilience* factor (respectively: $r = .38$ for Factor 1; $r = .56$ for Factor 2; $r = .29$ for Factor 3; and $r = .60$ for Factor 4, where for each component $p = .000$).

Attachment and resilience

Correlative analysis with Spearman's coefficient test was used to explore possible correlations between resilience in young people and their attachment to either of the parents. For boys, no correlation was established between *resilience* and *the attachment* to either of the parents; for girls, a positive correlation was established between *resilience* and *the attachment* to the mother ($r = .34$, $p < .05$).

On closer scrutiny, the attachment to the mother correlates with two resilience factors: 1. *Optimistic Attitude and Energy* ($r = 0.41$) and 2. *Persistence and Determination* ($r = 0.354618$). No correlations were revealed in girls between: 3. *Sense of Humour and Openness to New Experiences* and 4. *Personal Competence and Tolerance of Negative Affect* and their *attachment* to the mother.

Parenting styles and resilience

The sample provided the following information on the parenting styles prevalent in their families:

Authoritarian N = 12 Liberal N = 7 Democratic N = 51

The subsequent step in the analysis aimed to establish whether participants from families with different *parenting styles* differ in resilience levels. Two tests

were used to compare three groups (*authoritarian, liberal, and democratic*) for four different variables (four resilience factors). The Kruskal-Wallis test was used for 1. *Optimistic Attitude and Energy*, 3. *Sense of Humour and Openness to New Experiences*, and 4. *Personal Competence and Tolerance of Negative Affect*. For 2. *Perseverance and Determination*, which has homogeneous variance, the ANOVA test for a single factor was used.

The outcomes demonstrated that regardless of the *parenting styles* prevalent in their homes the groups failed to differ in each of *resilience* variables.

Gender and resilience

We also found it interesting to explore whether male and female participants differ in their resilience levels.

Table 2. Resilience levels in boys and girls. Differential analysis using the Mann–Whitney U test

	Total ranks: boys	Total ranks: girls	U	Z	P
Resilience	841.00	1644.00	369.00	1.70	0.089
Factor 1	881.00	1604.00	329.00	2.22	0.026
Factor 2	694.50	1790.50	484.50	−0.20	0.845
Factor 3	903.00	1582.00	307.00	2.50	0.012
Factor 4	808.00	1677.00	402.00	1.27	0.204

Source: own work.

Differential analysis using the Mann–Whitney U test revealed two statistically significant correlations. Male participants obtained a statistically significant score in 1. *Optimistic Attitude and Energy* ($z = 2.22, p < 0.05$) and 3. *Sense of Humour and Openness to New Experience* ($z = 2.50, p < 0.05$).

No other statistically significant differences were observed between the two genders.

Discussion

The relationship of temperament and resilience was covered by numerous studies that focused on protective factors such as easy temperament (Thomas, Chess, 1989), sociability (Werner, Smith, 1992), and being likeable (Block, 1993). Our outcomes suggest that three temperament traits have an impact on young people and their adaptive functioning: if they reach satisfactory levels, young people are able to achieve their goals despite stress, and they can also use a suitable solution to the problem and choose an adaptive response. The correlation between

Strength of Excitation and resilience yielded the highest score. SE is defined as a functional efficiency, or the ability to handle long-term excitation or short-term and powerful excitation. The efficacy of the nervous system marks the ability to function under prolonged strain or difficult working conditions. *Mobility of the Nervous System* is in turn defined as an ability to adapt to change by switching from excitation to inhibition. In the resilience context, MNS can be defined as the ability to set priorities, coordinate the needs, and choose an adaptive response. *Balance of the Nervous System* describes an excitation-inhibition ratio, which reflects how effectively a response can be started and stopped.

The outcomes describing the relationship between temperament and resilience are in line with other researches on mental health. Researchers in addition have revealed a connection between the two in small children who had poor impulse control, were aggressive, and persistently broke the rules. The three traits were also powerful predictors of poor impulse control in adolescence. High levels of uncontrolled behaviours are a powerful predictor of addiction in early adulthood (Zucker, Donovan, Masten, Mattson, Moss, 2008). One intriguing outcome of our research is a positive correlation between the attachment to the mother and resilience in girls. The outcome demonstrates the role bonding with the parents plays in adolescence. The need to bond with peers does not exclude seeking a safe haven in one's parents. Teenagers who are well connected to their parents find it easier to cope with the challenges of adolescence, have a higher self-esteem, are less depressive and less prone to negative peer pressure, and more curious, and more independent (Armsden, Greenberg, 1987). Adolescence reshapes the child-parent dynamic, as the parent becomes a partner rather than an advisor; it also brings a time when children become closer to the parent of the same gender and draw from their experience and support. The answer to the question why the attachment to the mother correlates with resilience in girls only can be based on researches suggesting that adolescent girls are more likely to benefit from social support than boys (Werner, Smith, 1992; Garmezy, 1993). This may be due to different socialisation patterns and different expectations from the two genders (Chuang, Lamb, Hwang, 2006). Boys usually develop through action and are task oriented. Girls in turn build their ego through relationships with other people. The mother-daughter relationship sometimes temporarily deteriorates during adolescence. According to Caron (2004), the key message for the mother-daughter relationship is expressed by one sentence: "Never stop loving me." The strong and profound attachment to the mother seems to be particularly important throughout adolescence (Caron, 2004).

Results of research on sex dimorphism promote our findings (Lamb, 1981). The consequences of sex differences shape interactions within family and show better understanding of adolescents' development by the parent of the same sex. Moreover, it was observed that the same parent's action implicates different emotional and behavioral response in sons and daughters (Plopa, 2006; Napora, Schneider, 2010). Mother-daughter bond is supposed to be an exceptional relation

(Penington, 2003). Both emotional relation and the quality of affective bond with mother are very important for healthy psychic and social development in daughter. Additionally, these influence significantly her personality, attitudes and believes (Birch, Malim, 1998). Cordial and close relation with mother gives her daughter experience of love, acceptance and support. Open communication between mother and daughter correlates positively with girl's attractiveness in the female peer group (Napora, Pękala, 2014) and is also a lesson of being able to hear and understand other people, the lesson of respect and partnership (Ryś, 2004). It is reasonable to conclude that deep and satisfied bond with mother promotes in an adolescent girl a feeling of being supported and having confidence to initiate and keep other social relations.

The fact that no significant differences were revealed in resilience levels in young people raised with different parenting styles seems to confirm conclusions that Harris (2000) offered on the primacy of nature over nurture. The three parenting styles: authoritarian, liberal, and democratic, are completely different in the ways parents treat their children and their affairs. Thus, different developmental effects could be expected from children raised in different environments. However, various disruptions that affect the quality of the measurement must be taken into account, including the fact that young people may be prone to shifting moods. Additionally, parents sometimes adopt different parenting styles, whereas children remember only the salient one. This undoubtedly requires a more detailed research with separate questions to examine the parenting styles of the father and of the mother.

Our research revealed differences in resilience between girls and boys who obtained a higher and statistically significant score in *Optimistic Attitude and Energy* ($z = 2.22$, $p < 0.05$) and *Sense of Humour and Openness to New Experience* ($z = 2.50$, $p < 0.05$). Boys scored higher in two resilience factors that reflect the requirements men have to meet in society: optimism, energy, humour, and openness to change. The data can thus be interpreted in the light of biological "maturation enthusiasm" and as a development process that is in line with social expectations. Researches on resilience in late adolescents (Nakaya, Oshio, Kaneko, 2006; as cited in: Ogińska-Bulik, Juczyński, 2011) demonstrated a correlation between resilience and the Big Five personality traits. Resilience was found to correlate positively with extraversion and openness to experiences, which are very much akin to *Optimistic Attitude and Energy* and *Sense of Humour and Openness to New Experience*. Additionally, the researches demonstrated a significant and positive correlation between resilience and problem-focused strategies, and a negative one between resilience and emotion-focused strategies. Adolescent boys are more action oriented, whereas girls are more focused on their relationships, which is why problem-solving strategies used by boys are reflected in their higher resilience levels.

Resilience research also demonstrated differences between ego-resilience development patterns in boys and girls. For both genders, ego-resilience initially grew when children were between 2 and 3 years of age, and later dropped when

they were between 7 and 8, a converse model of development was observed at this stage: resilience in girls began to grow until adolescence, whereas in boys it continued to subside. Eight-year-old boys had much higher resilience levels than girls, whereas fifteen-year-old girls had much higher resilience levels than boys (Chuang, Lamb, Hwang, 2006). The research seems to confirm that boys have stable resilience levels. Contradictory outcomes were obtained with regard to girls. According to Block (1993), resilience levels tend to vary in girls between 4 and 18 years of age. According to Chuang et al. (2006), their resilience levels are stable in childhood and begin to grow in adolescence.

Young people and their resilience in the academic context are important fields of study because schools play a major role in young people's development; as young people grow older, they also gain in self-awareness and self-management skills. Resilience in the academic context was previously researched using a six-item scale (Martin, Marsh, 2006) in which students assessed the ways they coped with challenges, failures (bad marks and reputation), and academic pressure. Resilience in the school context was also investigated through behaviours students displayed in stressful situations (Hoge et al., 2007), their self-assessment of academic success (McGubbin, 2003; as cited in: Cassidy, 2016), and their adaptive or maladaptive response to failure (Cassidy, 2016).

Cassidy (2016) developed a new tool for resilience research in students (ARS-30) based on two other resilience scales: the Resilience Scale for Adults (Friborg et al., 2003) and the Brief Resilience Scale (Smith et al., 2008). Cassidy's inventory derives from the multidimensional context-specific approach to resilience as an ability to overcome academic challenges. The ARS-30 investigates three factors: perseverance, reflecting and adaptive help-seeking, and negative affect and emotional response.

Schools may find it challenging to monitor resilience in the academic context. However, they may also discover an opportunity to organise resilience fostering interventions and promote academic achievement (Fallon, 2010).

The scores obtained in the sample suggest young people's high resilience resources, good temperamental endowment, and a poor ability to use family support. This no surprise considering they are adolescents. However, with high academic pressure these young people are exposed to at their school, it may be a good idea to make the parents more connected to their children.

Summary

1. The outcomes suggest that young people's temperament (Strength of Excitation, Mobility of the Nervous System, and Balance of the Nervous System) is more important for their resilience than the parenting styles prevalent in their families. This seems to confirm Harris's (2000) claim on the primacy of nature over nurture.

2. Resilience in girls is heavily influenced by their attachment to the mother. No such correlation is revealed in boys. The attachment to the father has no impact on resilience for both genders.
3. Gender-determined differences are demonstrated by boys and their higher scores in Optimistic Attitudes and Energy and Sense of Humour and Openness to New Experiences. The score represents the strengths boys exhibit at this age.
4. The outcomes may serve as a basis for further research in which the following should be considered: a) The sample should be extended and more balanced in gender. b) Tools investigating attachment and parenting styles should be developed. c) Both parents and young people can be investigated to obtain comparative data.

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